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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/974,979	10/12/2001	Masakazu Yamauchi	36856.557	8108

7590 06/24/2004

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EXAMINER	
SUMMONS, BARBARA	
ART UNIT	**PAPER NUMBER**
2817	

DATE MAILED: 06/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/974,979	YAMAUCHI, MASAKAZU	
	Examiner	Art Unit	
	Barbara Summons	2817	

-- The MAILING DATE of this communication appears on th cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-5* is/are allowed.

6)☒ Claim(s) *6,8,9,11-17,19,20 and 22-24* is/are rejected.

7)☒ Claim(s) *7,10,18 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 January 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/21/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (see e.g. page 4, lines 2-4). See MPEP § 608.02(g). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

3. Claims 12, 13, 20, 23 and 24 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12 and 13 each recite the limitations "said first surface", "said internal electrode" and "said second surface" on lines 2-5 thereof. There is insufficient antecedent basis for these limitations in the claims. Should claims 12 and 13 correctly depend from claim 9?

Claim 20 recites the limitation "The three-terminal filter" on line 1 thereof. There is insufficient antecedent basis for this limitation in the claims.

Double Patenting

4. Claims 14, 16, 17, 19 and 22 are directed to an invention not patentably distinct from either claims 1 and 2 of commonly assigned U.S. Patent No. 6,700,302 ('302) or from claims 1 and 2 of commonly assigned U.S. Patent No. 6,563,400 ('400). Specifically, claim 1 of the '302 patent recites every limitation of the instant application, including: "at least two piezoelectric layers"; "two surface electrodes" and an "internal electrode" being the "at least three electrodes" of the instant application; "the polarization directions of the at least two piezoelectric layers... are opposite to each other relative to the internal electrode"; the resonator/filter vibrates "in a bending mode" which is equivalent to the "area flexural mode" of the instant application; and wherein the piezoelectric layers and electrodes are inherently alternately disposed, and having them be "laminated" is considered a product-by-process limitation not affecting the structure of the final product which determines patentability of an apparatus claim. Claim 1 of the '400 patent recites a resonator filter having every limitation of the instant application, including: the "alternately laminated" electrodes and piezoelectric layers (lines 3-5); the utilization of "bending vibrations" (line 1) which is equivalent to the "area flexural mode"; and the polarization directions of the piezoelectric layers inherently being in opposite directions to provide the difference between the directions of polarization and electric field recited (see the last two paragraphs of the claim). The additional structure recited in the patents are irrelevant, as the overlapping subject matter is the area flexural mode resonator/filter itself and not the "case body" structure also recited in '302 or the "insulation layers" and "end surface electrodes" also recited in

the '400 patent. Additionally, Claim 2 of each of the patents recites the subject matter of claim 19 of the instant application.

5. The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP § 2302). Commonly assigned U.S. Patent Nos. 6,700,302 and 6,563,400 discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee is required under 35 U.S.C. 103(c) and 37 CFR 1.78(c) to either show that the conflicting inventions were commonly owned at the time the invention in this application was made or to name the prior inventor of the conflicting subject matter. Failure to comply with this requirement will result in a holding of abandonment of the application.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications filed on or after November 29, 1999.

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 14, 16, 17, 19 and 22 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 2 of U.S. Patent No. 6,700,302 and claims 1 and 2 of U.S. Patent No. 6,563,400. Although the conflicting claims are not identical, they are not patentably distinct from each other for the same reasons explained thoroughly in paragraph 4 above.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (f) he did not himself invent the subject matter sought to be patented.

9. Claims 14, 16, 17, 19 and 22 are rejected under 35 U.S.C. § 102(e) as being anticipated by either Yamamoto et al. U.S. 6,700,302 or Itasaka et al. U.S. 6,563,400.

Figs. 2A and 2B of Yamamoto disclose a piezoelectric resonator filter comprising: a plurality of three electrodes being an internal electrode 13 and surface electrodes 14;

and a plurality of two piezoelectric layers 12 alternately disposed with the electrodes, wherein "laminated" is given little patentable weight as a product-by-process limitation not affecting the structure of the final product as discussed above; the piezoelectric layers 12 are polarized in a thickness direction and in opposite directions relative to the internal electrode 13 (see col. 6, lines 26-30), and the electrodes and piezoelectric layers are configured to vibrate in a bending mode (see Fig. 2B) which is the same as the "area flexural mode" of the instant invention (see Applicant's Fig. 6); and wherein the piezoelectric layers have a square shape (see col. 6, lines 22-23).

Figs. 3 and 4B of Itasaka et al. disclose a resonator filter comprising: a plurality of three electrodes being surface electrodes 4 and 5 and internal electrode 3 which are alternately laminated with a plurality of two piezoelectric layers 1 and 2; the piezoelectric layers being polarized in opposite directions being inward or outward in the thickness direction (see Fig. 3 and col. 7, lines 15-19); and the piezoelectric layers and electrodes are configured to vibrate in a bending mode (Fig. 4B) that is equivalent to the "area flexural mode" of the instant invention; and wherein the piezoelectric layers are square (see e.g. col. 7, lines 3-4).

The applied references each have a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the references, they constitute prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the references was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

10. Claims 14, 16, 17, 19 and 22 are rejected under 35 U.S.C. § 102(f) because the applicant did not invent the claimed subject matter.

The subject matter of the instant invention is disclosed and claimed in the earlier filed Yamamoto et al. U.S. 6,700,302 patent and in the Itasaka et al. U.S. 6,563,400 patent each of which has a different inventive entity from the instant application and none of which have any common inventors with the instant application, or with each other for that matter.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 6, 8, 9, 11-13, 15, 20, 23 and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto et al. U.S. 6,700,302 in view of Inoue et al. U.S. 5,084,647.

Yamamoto et al. discloses the invention as discussed above and also discloses the first and second surface electrodes 14 functioning as input and output electrodes connected to the input/output external electrodes 29a and 29b (Fig. 3) of the surface mount package (see col. 8, line 59 to col. 9, line 6) and discloses that the polarization directions of the piezoelectric layer may be toward or away from the internal electrode (see col. 6, lines 31-36).

However, Yamamoto et al. does not explicitly disclose the resonator filter functioning as a three-terminal filter with the internal electrode grounded.

Inoue et al. discloses a similar layered piezoelectric resonator filter (see Figs. 2 and 4), although it vibrates in a different mode, and discloses that it is known to ground the internal electrode such that it functions as a three-terminal filter.

Consequently, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the resonator filter of Yamamoto et al. (Figs. 2A and 2B), if even necessary, such that the internal electrode would have been grounded for the filter to operate as a three-terminal filter, because Yamamoto et al. is silent as to the connection of the internal electrode thereby suggesting to one of ordinary skill that it must be either floating or grounded, and grounding the internal electrode to provide a three-terminal filter would have been well known by one of ordinary skill as evidence by the exemplary teaching thereof by Inoue et al. (Fig. 4). Additionally, it should be noted that Inoue et al. provides evidence that such layered piezoelectric resonator filters are typically "laminated" (see col. 5, lines 56-68).

Allowable Subject Matter

13. Claims 1-5 are allowable over the prior art of record.

14. Claims 7, 10, 18 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose or fairly suggest an area flexural mode piezoelectric resonator filter having each of the specifically recited combinations of features, and especially wherein all of the electrodes have a "substantially square shape" (see claim 1, line 3, and claims 7 and 18), or the piezoelectric layers are "polarized in the same direction" (claims 10 and 21). It should be noted that, although Yamamoto et al. discloses that the surface electrodes 14 cover the entire surface of the square piezoelectric layers so that the surface electrodes 14 are square (see col. 6, lines 22-26), there is no disclosure of the size or shape of the internal electrode in such a bending/area flexural mode resonator filter. Additionally, there is no disclosure in Yamamoto et al. to indicate that the bending/area flexural mode resonator filter would function in that mode with the piezoelectric layers polarized in the same direction, since Yamamoto et al. explicitly discloses polarizing them in opposite directions.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Funaki U.S. 6,744,184 shows a piezoelectric resonator filter with four electrodes and three piezoelectric layers and using a radial flexural mode (see the abstract, line 1).

Berlincourt U.S. 3,614,483 discloses a three-terminal piezoelectric resonator filter formed of alternating piezoelectric layers and electrodes and operating in a flexural mode (see Figs. 3a-c and col. 4, lines 13-26).

Berlincourt et al. U.S. 3,590,287 also discloses a three-terminal piezoelectric resonator filter formed of alternating piezoelectric layers and electrodes with the internal electrode grounded (see Figs. 1 and 2).

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bs
June 23, 2004

Barbara Summons

BARBARA SUMMONS
PRIMARY EXAMINER